

RESEARCH ARTICLE

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On-call transthoracic echocardiographic interpretation by first year cardiology fellows: comparison with attending cardiologists

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Abstract

Background: Transthoracic echocardiograms (TTE) performed and interpreted by cardiology fellows during off-duty hours are critical to patient care, however limited data exist on their interpretive accuracy. Our aims were to determine the discordance rate between TTEs performed and interpreted by cardiology fellows and National Board of Echocardiography certified attending cardiologists and to identify factors associated with discordance.

Methods: Consecutive on-call TTEs acquired and interpreted by 1st year cardiology fellows over 4.6 years at an academic center were prospectively evaluated by attending cardiologists. Fellow interpretations were classified as concordant or discordant with the attending interpretation. We assessed the association of patient, imaging and fellow characteristics with discordance.

Results: A total of 777 TTE interpretations (730 patients) were performed/interpreted by 40 first year fellows and overread by 13 attendings. The most common indications were assessment of left ventricular function (40.9%) and pericardial effusion (37.3%). There was a major or minor discordance in 4.1 and 17.4% of studies, respectively with 42.1% of disagreements occurring in assessment of left ventricular size and function. The indication to assess left ventricular function [OR 2.19, 95% CI (1.32, 3.62), $P = 0.002$ vs. pericardial effusion] and greater duration of echocardiographic image acquisition (OR 1.02, 95% CI 1.01, 1.03, $P = 0.004$) were independently associated with overall discordance.

Conclusions: In this large prospective study we found that attending cardiologists disagreed with 1 in 5 fellow TTE interpretations. Standardized tools for evaluation of echocardiograms performed by fellows are needed to ensure quality of training and patient safety.

Keywords: Echo, Fellow, Training

Background

Transthoracic echocardiography (TTE) is a widely used, highly available and low cost non-invasive diagnostic imaging modality. Many teaching hospitals rely on cardiology fellows to perform and interpret emergent TTEs after regular laboratory business hours. These studies are critical to guide clinical decision-making and patient management.

While there is an increasing awareness of diagnostic errors as a major source of preventable patient harm [1], data evaluating accuracy of TTEs performed and interpreted by cardiology fellows are scarce. Prior work in this field is limited to retrospective studies of small sample size or fellow interpretations of sonographer-obtained TTEs [2].

Systems-related factors and cognitive errors contribute to wrong, missed or unintentionally delayed diagnoses [3] in many aspects of medicine and national organizations have identified diagnostic errors as a top priority [4]. Accordingly, the Core Cardiology Training Symposium (COCATS) mandates that training of cardiology fellows should include

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1 Year Of Cardiology

Joacim Rocklöv



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1 Year Of Cardiology Introduction

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